We will begin momentarily at 2pm ET

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“Why am I muted?”
Don’t worry. Everyone is muted except the presenter and host. Thank you and enjoy the show.

Type them into questions box!

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Chris Warner,
Research Scientist,
Army Corps of Engineers

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Check out Celia Elliott’s Reddit AMA for your answers to science writing!

How to Write Abstracts that Capture your Audience

Celia M. Elliott
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From the editors of *J. Chem. Phys. Lett.*

1. The title and abstract are written in such a way that they are simple and attractive. They draw sufficient interest and lead to the reading of the rest of the paper. The new advances and the importance of the study are clearly pointed out in the abstract.


Three Immutable Rules for Abstracts:

#1—Every paper or talk must have one

#2—The quality of your abstract largely determines whether anybody actually *reads* your paper or *comes to your talk*

#3—Electronic indexing of abstracts has special implications for authors—don’t put anything in an abstract that cannot be rendered in plain text
The purpose of an abstract is to get somebody to come to your talk or to read your paper

Attract her attention in the first sentence

• What did you *do*?
• What’s new?
• Why is it interesting?

Don’t write “mystery-story” abstracts ("all will be revealed later...")

The abstract must reflect the entire paper or talk, in miniature

“good” abstract (contains all the fish)

“bad” abstract (missing fish)
Audience Question

What makes a busy scientist decide to read a paper or come to a talk?

a) The title
b) The reputation of the authors
c) The abstract
d) The references (is his or her own work cited?)

Answer: Probably all of the above

a) The title
b) The reputation of the authors
c) The abstract
d) The references (is his or her own work cited?)

If you’re a young scientist without a big reputation yet, you must pay particular attention to providing an effective title* and a GOOD ABSTRACT!

*http://people.physics.illinois.edu/Celia/EffectiveTitles.pdf
To whip up a perfect abstract...

follow the recipe!

Celia’s Foolproof Abstract

Four Ingredients:

What problem did you study and why is it important?
What methods did you use?
What were your principal results?
What conclusions have you drawn from these results?

Assemble all ingredients in this order.
Measure carefully and taste repeatedly.
Allow to sit overnight. Taste again and adjust seasonings.
Hew to this recipe (MMRC) witlessly*

1. **M**—Give the motivation and context
2. **M**—Explain what you did in sufficient detail so the audience knows if your work is relevant and applicable to his or hers
3. **R**—Emphasize your key results
4. **C**—Tell the reader what you think the results mean

*Nothing else. Really.*

Here’s an excellent* abstract:

PRL 107, 117401 (2011)  PHYSICAL REVIEW LETTERS  week ending, 9 SEPTEMBER 2011

**Optical Response of Relativistic Electrons in the Polar BiTel Semiconductor**

J. S. Lee,1,2 G. A. H. Schober,2,3 M. S. Bahramy,4 H. Murakawa,5 Y. Onose,2,5 R. Arita,2,4 N. Nagaosa,2,6 and Y. Tokura2,6,5

The transitions between the spin-split bands by spin-orbit interaction are relevant to many novel phenomena such as the resonant dynamical magnetoelectric effect and the spin Hall effect. We perform optical spectroscopy measurements combined with first-principles calculations to study these transitions in the recently discovered giant bulk Rashba spin-splitting system BiTel. Several novel features are observed in the optical spectra of the material including a sharp edge singularity due to the reduced dimensionality of the joint density of states and a systematic doping dependence of the intraband transitions between the Rashba-split branches. These confirm the bulk nature of the Rashba-type splitting in BiTel and manifest the relativistic nature of the electron dynamics in a solid.

Motivation + Methods + Results + Conclusions *(MMRC)*

*Special thanks to Lance Cooper for pointing out this abstract to me.*
Optical Response of Relativistic Electrons in the Polar BiTeI Semiconductor

J. S. Lee,1,2 G. A. H. Schober,2,3 M. S. Bahramy,4 H. Murakawa,5 Y. Onose,2,5 R. Arita,2,4
N. Nagaosa,2,6 and Y. Tokura1,2,5

The transitions between the spin-split bands by spin-orbit interaction are relevant to many novel phenomena such as the resonant dynamical magnetoelectric effect and the spin Hall effect. We perform optical spectroscopy measurements combined with first-principles calculations to study these transitions in the recently discovered giant bulk Rashba spin-splitting system BiTeI. Several novel features are observed in the optical spectra of the material including a sharp edge singularity due to the reduced dimensionality of the joint density of states and a systematic doping dependence of the intraband transitions between the Rashba split branches. These confirm the bulk nature of the Rashba-type splitting in BiTeI and manifest the relativistic nature of the electron dynamics in a solid.

Motivation + Methods + Results + Conclusions

Motivation + Methods + Results + Conclusions
The transitions between the spin-split bands by spin-orbit interaction are relevant to many novel phenomena such as the resonant dynamical magnetoelastic effect and the spin Hall effect. We perform optical spectroscopy measurements combined with first-principles calculations to study these transitions in the recently discovered giant bulk Rashba spin-splitting system BiTeI. Several novel features are observed in the optical spectra of the material including a sharp edge singularity due to the reduced dimensionality of the joint density of states and a systematic doping dependence of the intraband transitions between the Rashba-split branches. These confirm the bulk nature of the Rashba-type splitting in BiTeI and manifest the relativistic nature of the electron dynamics in a solid.

Motivation + Methods + Results + Conclusions
Audience Question

What is the most common mistake that abstract writers make?

a) Including too much introductory material
b) Being vague and overly general
c) Using too much jargon
d) Failing to consider their audiences’ wants, motivations, and needs

Answer: I’d say d)*

a) Including too much introductory material
b) Being vague and overly general
c) Using too much jargon
d) Failing to consider their audiences’ wants, motivations, and needs

*Although any of these mistakes will cost you readers and listeners
No fluff* in your abstract

No introductory fluff—get straight to the point in the first sentence

No sweeping generalizations at the end

(No drama either—be objective)

*http://people.physics.illinois.edu/Celia/Lectures/Fluff.pdf

Here’s a “fluffy” abstract:

Energy and environment are two major concerns of the modern world. Transition to the sustainable clean energy globally in the future, however, depends on the development of next generation electrical energy storage systems. Among the energy storage techniques considered at present, rechargeable lithium-ion batteries, which are ubiquitous in today’s portable electronic devices and now enable the electric vehicles, remain promising to facilitate the use of renewable energy on a large scale. For such application, transformational changes in battery technologies are critically needed, which require a fundamental understanding of the complex, interrelated physical and chemical processes between electrode materials and electrolytes. Soft x-ray absorption spectroscopy (sXAS) is a powerful tool to probe the chemical species and the electronic states with elemental sensitivity. This presentation will discuss examples on using sXAS to study battery materials for both fundamental understanding and practical developments. We will showcase how sXAS fingerprints the battery operation by detecting the evolving electron states. Recent results on SEIs and Li-rich cathode materials will be discussed. Our results offer important information for improving Li batteries.

Motivation? + Methods? + Results? + Conclusions?
Here’s a “fluffy” abstract:

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Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur esse cillum aute. This presentation will discuss examples on using sXAS to study battery materials for both fundamental understanding and practical developments. We will showcase how sXAS fingerprints the battery operation by detecting the evolving electron states. Recent results on SEIs and Li-rich cathode materials will be discussed. Our results offer important information for improving Li batteries.

Motivation + Methods? + Results? + Conclusions?

It’s a mystery story, too

Energy and environment are two major concerns of the modern world. Transition to the sustainable clean energy globally in the future, however, depends on the development of next generation electrical energy storage systems. Among the energy storage techniques considered at present, rechargeable lithium-ion batteries, which are ubiquitous in today’s portable electronic devices and now enable the electric vehicles, remain promising to facilitate the use of renewable energy on a large scale. For such application, transformational changes in battery technologies are critically needed, which require a fundamental understanding of the complex, interrelated physical and chemical processes between electrode materials and electrolyte. Soft x-ray absorption spectroscopy (sXAS) is a powerful tool to probe the chemical species and the electronic states with elemental sensitivity. This presentation will discuss examples on using sXAS to study battery materials for both fundamental understanding and practical developments. We will showcase how sXAS fingerprints the battery operation by detecting the evolving electron states. Recent results on SEIs and Li-rich cathode materials will be discussed. Our results offer important information for improving Li batteries.

Motivation + Methods? + Results? + Conclusions?
Read your draft abstract critically

Ideas are clear and concise
Language is precise and familiar to your audience
Statements are specific, quantitative, and objective
Conclusions are supported
Text is free of errors
Length limits are observed

To Recap:

Know thy audience!
Follow the MMRC recipe
Scale your abstract by adjusting the size of the “ingredients,” not by adding or omitting any
Don’t write “mystery-story” abstracts
Eliminate fluff
Write with the expectation that you will rewrite

cmelliot@illinois.edu
http://physics.illinois.edu/people/Celia/
How to Write Abstracts that Capture Your Audience

Patricia Simpson
University of Illinois, Urbana-Champaign’s
School of Chemical Sciences

Celia Elliott
University of Illinois, Urbana-Champaign’s Department of Physics

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